Amendments to the claims: This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (Currently Amended) A gradient copolymer comprising at least two different monomer units,

a) the first (M_1), the homopolymer of which ~~corresponding to~~ has a Tg_1 of less than 20°C, representing at least 50% by weight of the total weight of the copolymer,

b) the second (M_2), the homopolymer of which ~~corresponding to~~ has a Tg_2 of greater than 20°C, representing at most 50% by weight of the total weight of the copolymer, wherein at least one of the monomers ~~of the copolymer~~ M_1 or M_2 is hydrophilic, ~~and~~ represents at least 5% by weight of the total weight of the copolymer and is selected from the group consisting of polyethylene glycol acrylate, polyethylene glycol methacrylate, acrylic acid and methacrylic acid,

said gradient copolymer comprising at least one monomer M_i such that the probability of encountering M_i in any standardized position x situated on the polymer chain is nonzero; and wherein said gradient copolymer is soluble or dispersible in both water and in organic solvents at a concentration greater than or equal to 5%, and wherein said copolymer has number average and weight average masses of between 5000 g/mol and 1 000 000 g/mol and a polydispersity index of between 1.1 and 2.5, said copolymer further comprising nitroxide residue units; wherein the monomer M_1 is one or more monomers selected from the group ~~of monomers~~ consisting of: linear ~~or~~ and branched C_1-C_{12} alkyl acrylates, polyethylene glycol acrylate, polyethylene glycol methacrylate, dienes, butadiene and isoprene; and wherein monomer M_2 is one or more monomers selected from the group consisting of styrene, styrene derivatives, (meth)acrylic monomers, acrylic acid, methacrylic acid, norbornyl acrylate, methyl methacrylate, acrylonitrile and methacrylonitrile~~; and wherein the hydrophilic monomer(s) is selected from the group consisting of polyethylene glycol acrylate, polyethylene glycol methacrylate, acrylic acid and methacrylic acid~~.

2. (Previously Presented) The copolymer as claimed in claim 1, wherein Tg_1 is between -150 and 20°C.

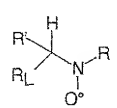
3. (Canceled)

4. (Previously Presented) The copolymer as claimed in claim 1, wherein the hydrophilic monomer represents at least 10% by weight of the total weight of the copolymer.

5. (Cancelled)

6. (Cancelled)

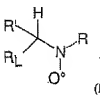
7. (Currently Amended) A process for producing the gradient copolymer of claim 1 comprising polymerizing by solution or bulk controlled radical polymerization, at a temperature of between 10 and 160°C, in the presence of a radical polymerization initiator and of an agent for controlling the polymerization, a mixture of monomers comprising at least two monomers, the first (M_1), the homopolymer of which ~~corresponding to~~ has a Tg_1 of less than 20°C, representing at least 50% by weight of the total weight of the mixture, the second (M_2), the homopolymer of which ~~corresponding to~~ has a Tg_2 of greater than 20°C, representing at most 50% by weight of the total weight of the mixture, wherein at least one of the monomers M_1 or M_2 is hydrophilic, ~~and represent~~ represents at least 5% by weight of the total weight of the mixture and is selected from the group consisting of polyethylene glycol acrylate, polyethylene glycol methacrylate, acrylic acid and methacrylic acid, wherein the agent for controlling the polymerization is a nitroxide of general formula:



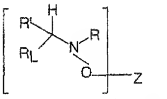
where R' and R, which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups; and where R_L is a monovalent group with a molar mass of greater than 16 g/mol which can be a phosphorus group or an aromatic group; wherein the monomer M_1 is ~~selected from the group of~~ one or more monomers selected from the group consisting of: linear [[or]] and branched C_1-C_{12} alkyl acrylates, polyethylene glycol acrylate, polyethylene glycol (meth)acrylate, dienes, butadiene and isoprene; and wherein M_2 is ~~selected from~~ one or more monomers selected from the group consisting of styrene, styrene derivatives, (meth)acrylic monomers, norbornyl acrylate, methyl methacrylate, acrylonitrile and methacrylonitrile~~; and wherein the hydrophilic monomer(s) in the copolymer, if from group M_1 is selected from the group consisting of polyethylene glycol acrylate and polyethylene glycol methacrylate, and if the hydrophilic monomer is from M_2 it is selected from the group consisting of acrylic acid and methacrylic acid~~.

8. (Cancelled)

9. (Currently Amended) The process as claimed in claim 7, wherein the radical polymerization initiator and the ~~control~~ agent for controlling the polymerization are replaced by a mixture composed of alkoxyamine corresponding to the following general formula (II) and of nitroxide corresponding to the general formula (I):



(I)

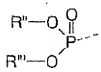


(II)

in which:

- n is an integer of less than or equal to 8 and preferably of between 1 and 3,
- Z is a carrying monovalent or polyvalent radical of styryl, acryloyl or methacryloyl type,
- where R' and R, which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups;
- and where R_L is a monovalent group with a molar mass of greater than 16 g/mol which can be a phosphorus group or an aromatic group, the nitroxide (I) representing from 0 to 20% by weight of the total weight of the mixture.

10. (Previously Presented) The process as claimed in claim 7 wherein, R_L is a phosphonate group of formula:



- where R'' and R''', which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups; the nitroxide (I) representing from 0 to 20% by weight of the total weight of the mixture.

11. (Previously Presented) A process for the aqueous dissolution, of the gradient copolymer of claim 1 comprising:

1) dissolving the copolymer in a ketone solution, at a level of solid of between 20 and 90%,

2) neutralizing the solution obtained in 1, if necessary, by addition of a molar solution either of acid or of base, the acid or base choice being conditioned by the chemical nature of the hydrophilic monomer,

3) adding water, with vigorous stirring, to the solution obtained in 1 or optionally in 2 in a proportion such that the level of solid obtained is between 1 and 80%; optionally, the water can be replaced by water/alcohol mixtures in proportions ranging from 99/1 to 50/50;

4) evaporating the ketone until the desired level of solid is obtained.

12. (Canceled)

13. (Previously Presented) A paint, adhesive, glue or cosmetic formulation comprising the gradient copolymer of claim 1.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Currently Amended) The copolymer of claim 1 wherein ~~the second monomer (M_2),~~ the homopolymer of the second monomer (M_2) ~~which corresponding to~~ has a Tg_2 of greater than 50°C.

18. (Previously Presented) The copolymer as claimed in claim 2, wherein Tg_1 is between -120 and 15°C.

19. (Previously Presented) The copolymer as claimed in claim 1, exhibiting a polydispersity index of between 1.1 and 2.

20. (Currently Amended) The process of claim 7 wherein said controlled radical polymerization[[,]] occurs at a temperature of between 25 and 130°C.

21. (Previously Presented) The paint, adhesive, glue or cosmetic formulation of claim 13,

wherein said formulation is an aqueous-based formulation.

22. (New) The gradient copolymer of claim 1, wherein the first monomer unit M_1 is selected from methyl acrylate, ethyl acrylate, butyl acrylate or a mixture thereof and the second monomer unit M_2 is styrene and methacrylic acid.